

Ensure correct connections with phasor diagrams!

A measurement campaign may be completely wrong and useless if the measurements are not performed correctly. One of the most frequent mistakes encountered is incorrect wiring.

The simplest way to check that analysers are correctly connected is the phasor diagram. Once the instrument has been fully configured, this verification can be used to ensure that the voltage leads and current clamps are positioned correctly.

This document assumes that the phases are identified as L1-L2-L3 and that different colours are assigned to the phases.



This is why directional arrows are marked on current clamps. They should point towards the load. The illustrations below show the C193 or MN93A clamp delivered as standard with the Qualistar.

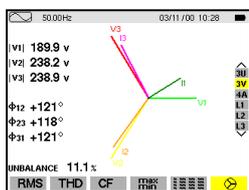


Top of
C193 clamp



Top of
MN93A clamp

On the Qualistar, the phasor diagram can be accessed simply by pressing the waveforms button located on the front of the Qualistar casing and then pressing the F6 key.

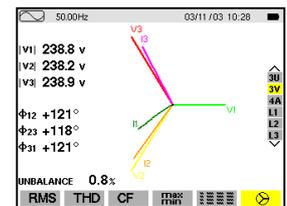


correctly: I_{L3} and V_{L3} , I_{L2} and V_{L2} , I_{L1} and V_{L1} .

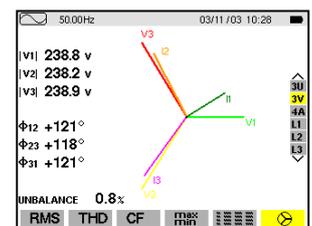
If the wiring is correct, the phasor diagram opposite will be displayed, as it shows that the respective voltages and currents of each phase are associated

If there is a connection error, the diagram will look like the examples which follow.

In the example on the right, two voltage leads have been reversed and one of the current clamps has been connected in the wrong direction. So I_{L1} is out of phase.



In this second example, two current clamps (or their voltage leads) are connected to the wrong phase. For example, the diagram shows V_{L3} associated with I_{L2} .



The use of phasor diagrams is an effective way of ensuring that the right connections are set up for reliable measurements.